



Public Information Meeting

Willow Brook Flood Mitigation Study



Project Partners



Department of
ENERGY & ENVIRONMENTAL PROTECTION

State of Connecticut Funding Provided for Capital Improvements for Flood and Erosion Control, Administered by the Connecticut Department of Energy and Environmental Protection.



Town of East Hartford



MILONE & MACBROOM

Purpose of Tonight's Meeting

- Introduce the Project Team
- Introduce the Willow Brook Flood Mitigation Study
- Review the Study Area and Known Issues
- Solicit Information and Input from Residents & Business Owners
- Present the Project Schedule and Identify Important Milestones
- Answer Any Questions



Milone & MacBroom, Inc.

- Founded in 1984
- Employee-Owned Firm
- Licensed Professionals
 - Water Resources
 - Computer Modeling
 - Urban Planning
 - Landscape Architecture
- Extensive Experience in Flood Mitigation



*A Group of Specialty Practices Operating
in a Collaborative Environment*

Project Team



James G. MacBroom, P.E.
Principal-in-Charge



Jeanine Armstrong Gouin, P.E.
Project Manager

Hydrology & Hydraulics



James Murac, P.E.



Brian Cote, P.E., CFM



Becky Meyer, E.I.T.

Mitigation Analysis



David Murphy, P.E., CFM



Roy Schiff, Ph.D., P.E.

Permitting & BCA Assessment



Matthew Sanford, M.S.



Scott Bighinatti, M.S., CFM

Survey & Field Investigations



Robert Jackson, L.S.



Jessica Pica, M.S. E.I.T.



Corey Pelletier

Project Overview

- Collect Existing Data & Mapping
- Conduct Field Investigations
 - ✓ Inspect the brook, watershed
 - ✓ Inventory structures
 - ✓ Inventory utilities & infrastructure
 - ✓ Map storm drainage outfalls
 - ✓ TV inspect underground portions
- Field Survey Corridor
- Conduct Hydrologic & Hydraulic Analysis
- Evaluate Flood Mitigation Alternatives
- Develop a Master Plan of Recommended Improvements
- Apply for a FEMA LOMR if Analysis Warrants

Potential Concerns and Issues

- High percentage of development and impervious cover
- Flat ground adjacent to Willow Brook – wide shallow floodplain
- Property owners in SFHA must carry flood insurance
- Actual flood conditions appear to be inconsistent with flooding predicted by FEMA FIRM mapping



Project Goals

- Assess Willow Brook and its Contributing Watershed
- Identify Existing Issues
- Identify and Evaluate Potential Solutions to Flooding
- Minimize need for Flood Insurance

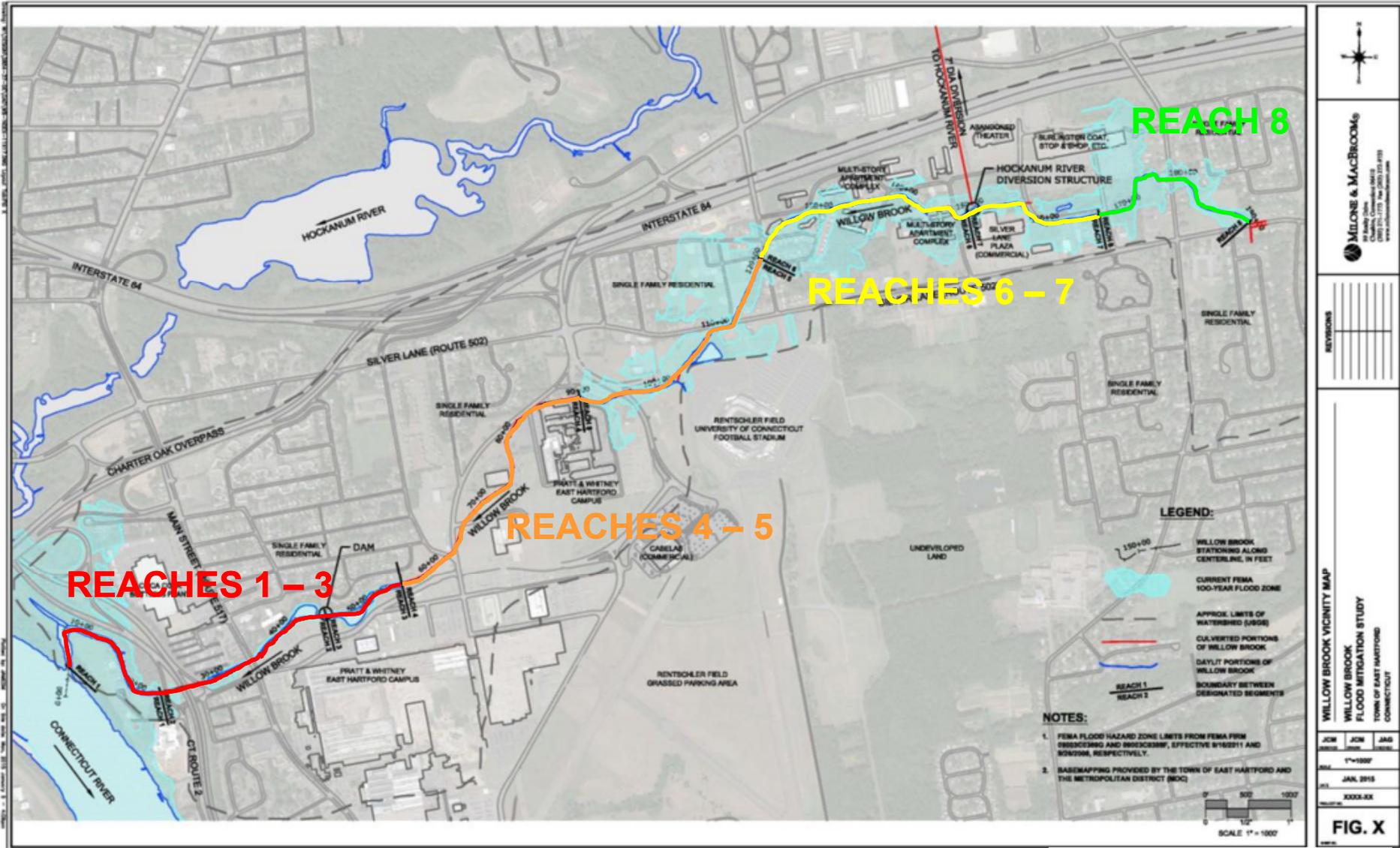


Survey and Data Collection

- MDC Base Mapping
- Supplement with Existing Mapping from Recent Projects and As-Built Surveys
- Survey New Cross Sections of the Brook & Upland Areas
- Survey Storm Drain Outfalls
- Survey Critical/Vulnerable Buildings in the Floodplain



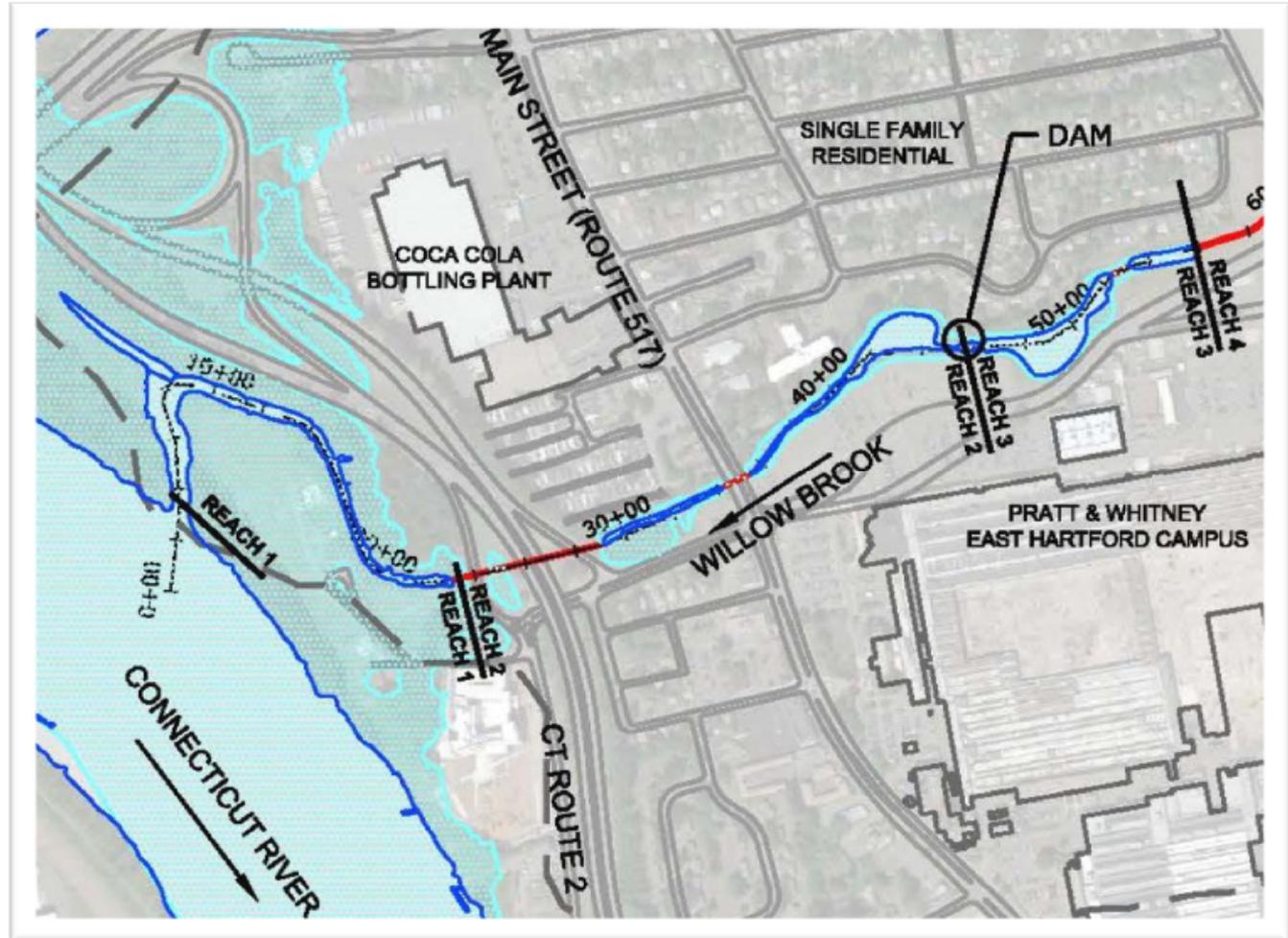
Willow Brook Reaches



Willow Brook Watershed

Reaches 1 – 3:

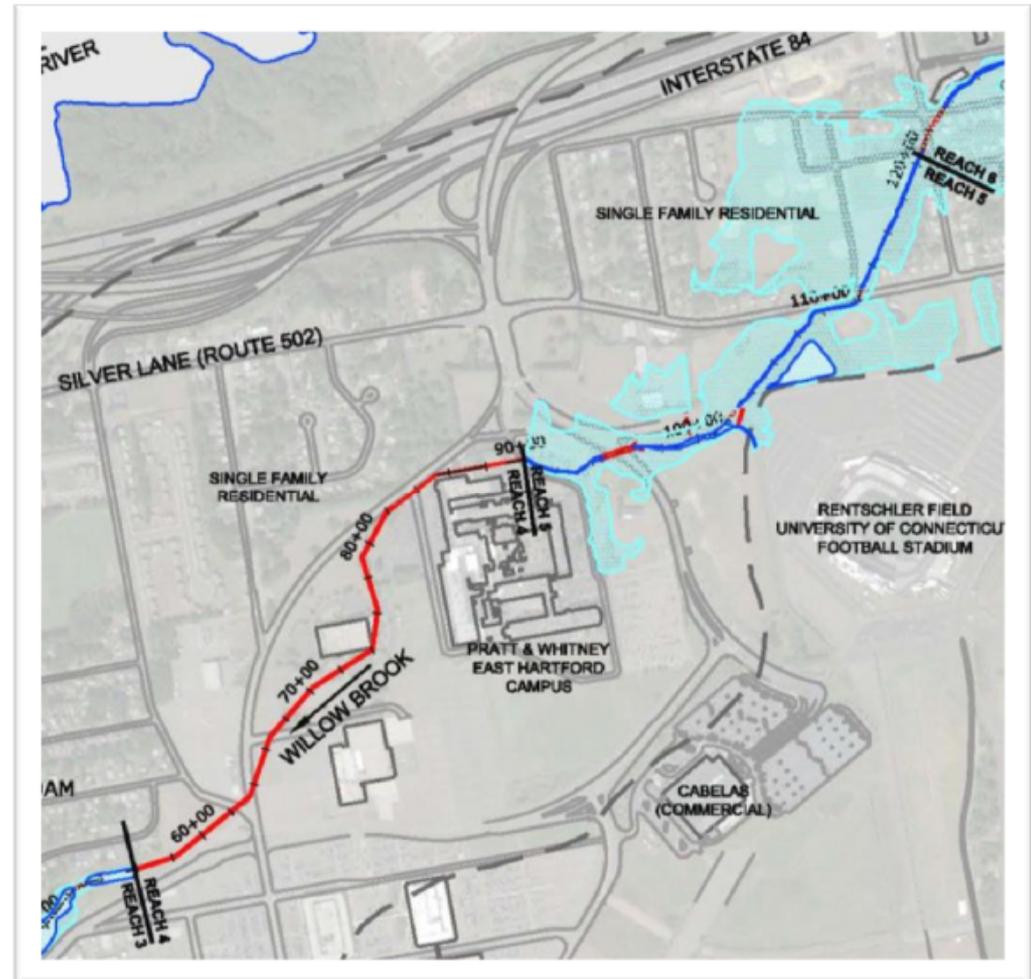
- CT River backwater area
- Pratt & Whitney Campus
- Upper & Lower Willow Ponds



Willow Brook Watershed

Reaches 4 – 5:

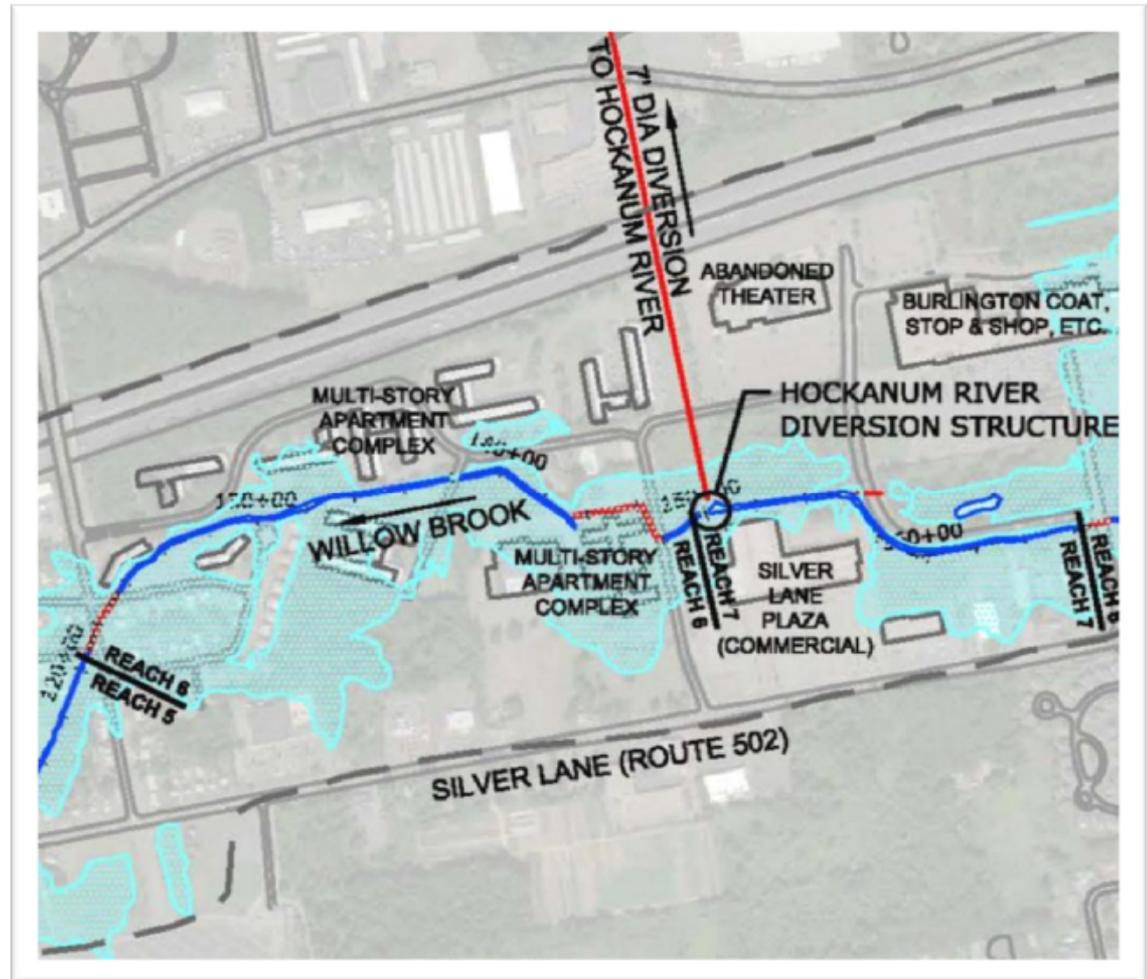
- Pratt & Whitney Campus
- Reach 4 is entirely underground
- Incomplete records of culvert construction
- Rentschler Field parking area
- P&W athletic fields
- Silver Lane, Simmons Road, Cumberland Drive, Gould Drive



Willow Brook Watershed

Reaches 6 – 7:

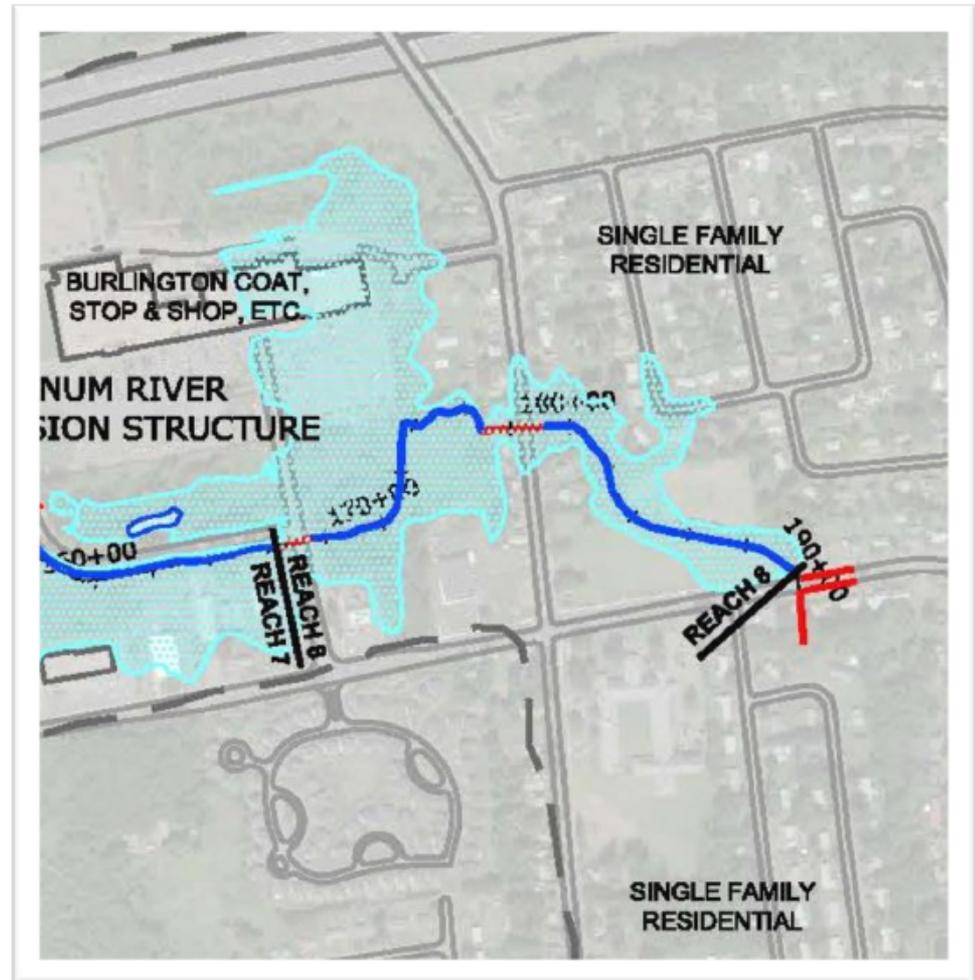
- Nutmeg Lane & Woodcliff Estates
- Bowling Alley
- Applegate Lane
- Hockanum River Diversion Structure
- Apartment Complex
- Silver Lane Plaza



Willow Brook Watershed

Reach 8 :

- Burlington Coat and Stop & Shop Plaza (Charter Oak Mall)
- Forbes Street
- Residential Area Storm Drainage Systems:
 - Silver Lane
 - Sawka Drive
 - Holland Lane
 - Brentmoor Road
 - Milwood Road
 - Birchwood Road



Understanding Flooding

Three Types of Flooding

- Tidal – Backwater from Long Island Sound via the Connecticut River
- Riverine – Waters from Willow Brook Rising
- Storm Runoff – Storm drainage systems and overland flow

FEMA Flood Insurance Rate Map (FIRM)

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0369G

FIRM

FLOOD INSURANCE RATE MAP HARTFORD COUNTY, CONNECTICUT (ALL JURISDICTIONS)

PANEL 369 OF 675
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
EAST HARTFORD, TOWN OF	090026	0369	G
HARTFORD, CITY OF	095080	0369	G

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.



**MAP NUMBER
09003C0369G**

**MAP REVISED
SEPTEMBER 16, 2011**

Federal Emergency Management Agency

LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD
The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equalled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, AP9, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- ZONE A** No Base Flood Elevations determined.
- ZONE AE** Base Flood Elevations determined.
- ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR** Special Flood Hazard Areas formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE AP9** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% Annual Chance Floodplain Boundary
- 0.2% Annual Chance Floodplain Boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities.
- Base Flood Elevation line and value; elevation in feet*
- Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

- Cross section line
- Transect line
- Culvert
- Bridge
- Geographic coordinates referenced to the North American Datum of 1983 (NAD 83) Western Hemisphere
- 1000-meter ticks: Connecticut State Plane Zone (FIPS Zone 0600), Lambert Conformal Conic projection
- 1000-meter Universal Transverse Mercator grid values, zone 18N
- Bench mark (see explanation in Notes to Users section of this FIRM panel)
- River Mile

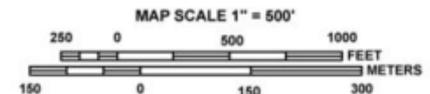
MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
September 26, 2008

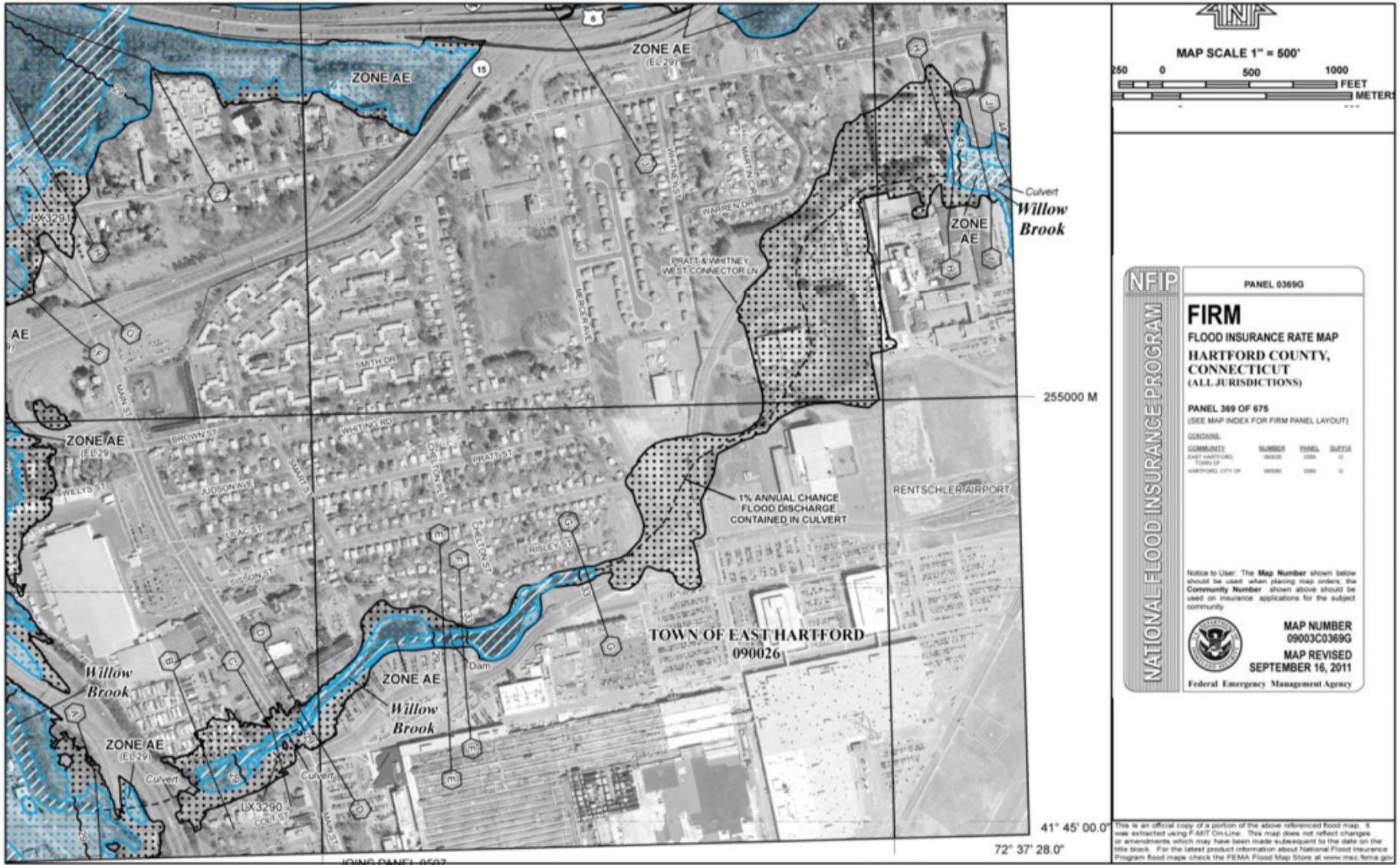
EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
September 16, 2011 - To change map notes and flood boundaries to reflect the accreditation of formerly provisionally-accredited levees.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

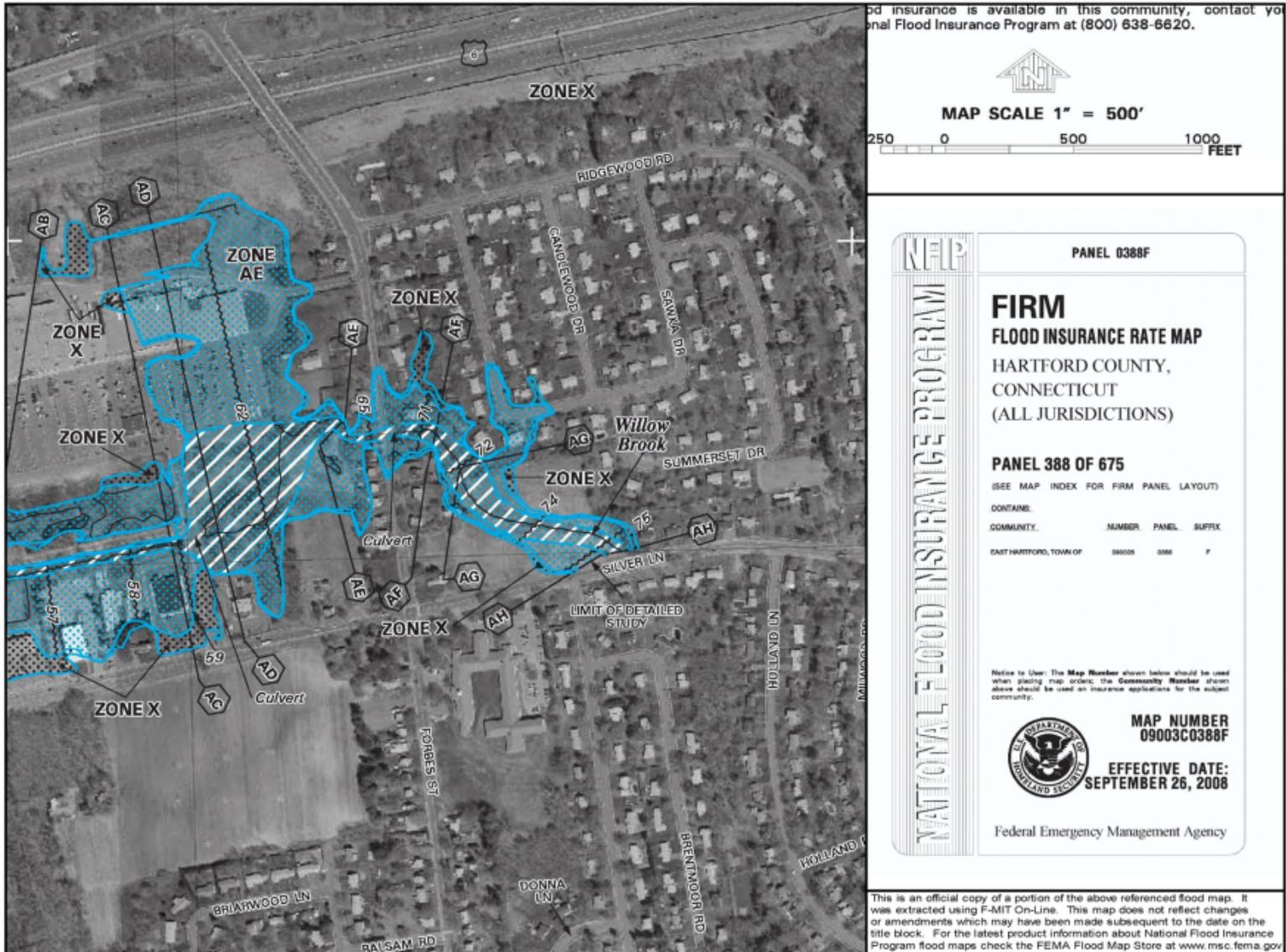
To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.



FEMA Flood Insurance Rate Map (FIRM)



FEMA Flood Insurance Rate Map (FIRM)



Potential Flood Mitigation Strategies

- Modify or remove bridges and culverts
- Remove channel constrictions
- Create floodplains or floodplain benches
- Remove debris or blockages
- Home or business relocation
- Home or business elevation



Next Steps

- Complete Field Investigations, Field Survey
- Conduct Hydrologic Modeling – Generate Flow Rates
- Complete Hydraulic Modeling – Evaluate Existing Conditions
- Identify and Model Alternatives
- Present Initial Findings at Next Meeting

Project Timeline

Milestone	Date To Be Completed
Project Initiation	Jan 2015
Public Meeting #1	Feb 2015
Data Collection and Field Assessments	Mar 2015
Field Survey & Base Mapping	Mar 2015
TV Inspection	Apr 2015
Hydrologic Assessment	Apr 2015
Existing Conditions Hydraulic Modeling & Delineation	Apr 2015
Public Meeting #2	Apr 2015
FEMA LOMR Application – OPTIONAL TASK	May 2015
Evaluation of Alternatives, BCA, & Funding Sources	May 2015
Recommended Improvements	May 2015
Draft Engineering Report	Jun 2015
Public Meeting #3	Jul 2015
Presentation to Town Council	Jul 2015
Final Engineering Report	Jul 2015

Questions, Comments, Thoughts, Input

